APPENDIX A

FM Radio Service Areas and Interference Protection Criteria

1. The current FM Broadcast Service consists of seven classes of licensed stations, Classes A, B1, B, C3, C2, C1, and C. (An eighth class, Class D, was discontinued in 1980, although applications for renewal and modification of these existing licenses are still accepted). Each class has specific technical and operational characteristics, such as effective radiated power ("ERP"), antenna height, and protected signal coverage area. Class A stations, the least powerful and shortest range of all the classes, have a maximum power limit of 6 kW and, when using maximum power, a Class A station may not use an antenna at a height greater than 100 meters (328 feet). (All heights are referenced to the height of the antenna above the average height of the terrain surrounding the antenna support structure ("height above average terrain" or "HAAT")). Class C stations, the most powerful and longest range of all the classes, have a minimum required ERP of 100 kW and, at that power, may not use an antenna at a height greater than 600 meters (1968 feet). The reference coverage area of each class of FM station is considered to be the area bounded by the 1 millivolt-per-meter (1 mV/m) signal strength contour from the station. For Class A stations using maximum facilities, the 1 mV/m contour is a circle with a radius of 28 kilometers (17 miles) around the station antenna. For Class C stations using maximum facilities, the 1 mV/m contour is a circle with a radius of 92 kilometers (57 miles) around the station antenna. For Classes B1 and C3, the 1 mV/m contour has a radius of 39 kilometers (24 miles); for Classes B and C2, the 1 mV/m contour has a radius of 52 kilometers (32 miles); and for Class C1, the 1 mV/m contour has a radius of 72 kilometers (45 miles). (These values are derived from the Commission's F(50,50) R-6602 propagation curves. *See* 47 C.F.R. § 73.333, Figure 1; *see also* 47 C.F.R. § 73.211).

2. Each current class of FM station is afforded protection from several types of harmful interference, specifically: interference from co-channel stations, *i.e.*, stations operating on the same frequency as the protected station; interference from first-adjacent channel stations, *i.e.*, stations operating one channel higher or lower in frequency than the protected station; interference from second-adjacent channel stations, *i.e.*, stations operating two channels higher or lower in frequency than the protected station; interference from third-adjacent channel stations, *i.e.*, stations operating three channels higher or lower in frequency from the protected station; and intermediate frequency ("IF") interference, *i.e.* signals from stations offset in frequency by 10.6 and 10.8 MHz from the protected station. (FM channels are each 200 kHz wide, resulting in 1st, 2nd, and 3rd adjacency spacings of 200 kHz, 400 kHz and 600 kHz, respectively.) The 1 mV/m signal contours of Class A, C3, C2, C1, and C stations must receive 20 dB co-channel protection, 6 dB first-adjacent channel protection, and -40 dB second- and third-adjacent channel protection. (In terms of millivolts per meter, co-channel interfering signals must be no greater than 0.1 mV/m, 1st-adjacent channel signals must be no greater than 0.5 mV/m, and 2nd/3rd adjacent signals must be no greater than 100 mV/m at the service contour of the station receiving protection). The 0.7 mV/m signal contours of Class B1 stations and the 0.5 mV/m signal contours of Class B stations must receive these same degrees of protection. For IF protection, the 36 mV/m contours of all station classes are protected against the 36 mV/m interfering contours of all stations spaced +/- 10.6 and 10.8 MHz. (*See* Section 73.207 of the Commission's rules, 47 C.F.R. § 73.207, for a table of minimum permissible station-to-station separation distances generally based on these protection ratios). For full-power services, Table A of Section 73.207 (a)(1) provides minimum distance separations for same and different class channel stations and for first-, second-, and third-adjacent channel stations as well. For example, a co-channel

same class distance separation ranges from 290 kilometers (180 miles) for Class C stations, the most powerful FM stations, to 71 kilometers (115 miles) for Class A stations. Where the classes are different (*i.e.*, Class A to B), the cochannel separations range from 270 kilometers (168 miles) for Class C1 to Class C, to 142 kilometers (88 miles) for Class A to Class C3. For adjacent channels, the required separations range from 241 kilometers (150 miles) for first adjacent Class C to Class C operation, to 6 kilometers (10 miles) for third adjacent Class A to Class A operation. The Commission established this distance separation method for channel assignment in 1962. It decided that using the distance separations would be most appropriate for the optimum development of the FM service. *See First Report and Order* in Docket 14184, 40 FCC 662, 685 (1962). In developing this method, and creating a table of minimum distance separations, the Commission took an approach that would allow it to make numerous assignments, while affording stations reasonably adequate protection from harmful interference. Based on the technology available at that time, it determined by class of station the distance required to provide protected service radii. It used field strength contours and based the original separations on these. It noted that some interference was to be expected, and that the receivers of that time could operate satisfactorily in such an environment. *Id.* at 686.

APPENDIX B

This appendix sets forth the minimum distance separations between the proposed classes of low power FM stations and existing full service FM stations. The first number in each box indicates the minimum distance necessary to ensure that the low power station would not create interference. The second number corresponds to the distance necessary to ensure that the low power station would not receive interference. The tables also show what distances would be necessary for co- and first-adjacent channel low power stations to provide interference protection to each other.

Distance separations between domestic facilities were based on the sum of the protected F(50,50) contour radius and the appropriate F(50,10) interfering contour radius as calculated in accordance with 47 C.F.R. §§ 73.313 and 73.333. Full service domestic stations were assumed to operate at § 73.211 maximum facilities.[118] Low power stations were assumed to utilize the maximum defined for the proposed class. Class B stations were protected to the 54 dBu F(50,50) contour and Class B1 stations are protected to the 57 dBu F(50,50) contour. All other classes (including low power) were protected to the 60 dBu F(50,50) contour. The interfering contours were determined using the following desired-to-undesired (D/U) signal ratios: co-channel, +20 dBu; first-adjacent channel,+6 dBu; second-adjacent channel (reserved band), -20 dBu; second- and third-adjacent channel (commercial band), -40 dBu. IF (intermediate frequency) spacings were calculated to prevent overlap of the 91 dBu F(50,50) (36 mV/m) contours of both stations.

Finally, minimum distance separations were calculated for low power stations operating within 320 kilometers of the common borders with either Canada or Mexico. The spacings in the Canadian and Mexican border zones were based on the maximum protected/interfering contours of the foreign allocations vs. the interfering/protected contours of the domestic low power stations, as required by Section 5 of the Canada-United States FM Broadcasting Agreement and Section 3 of the Mexico-United States FM Broadcasting Agreement, respectively. Any low power station within 320 km of either border would require coordination with the appropriate government.

[118] Class D stations are assumed to operate with 85 watts ERP at 30 meters HAAT. This yields a 60 dBu that extends 5.4 km (just below the minimum required for a Class A station).

CLASS LP1000

Assuming 1000 watt effective radiated power (ERP)
at 60 meters antenna height above terrain (HAAT)
60 dBu F(50,50) protected contour extends 14.2 km

MINIMUM DISTANCE SEPARATION (KM) NECESSARY TO:
CAUSE NO OVERLAP/RECEIVE NO OVERLAP

Channel Class	co-	1st-	2nd- reserved band	2nd-/3rd- commercial band	IF
A	79/101	50/58	33/23	31/17	7
C3	90/128	60/74	44/27	41/18	9
B1	105/128	70/74	50/27	46/18	9
C2	103/152	73/92	57/34	54/20	13
B	137/152	95/92	71/34	67/20	13
C1	123/186	94/119	77/48	75/24	20
C	143/212	113/151	96/65	94/28	28
D	56/32	27/22	10/16	8/15	4
Other LP1000	65	35			

CLASS LP1000
WITHIN 320 KM OF THE CANADIAN BORDER

Channel Class	co-	1st-	2nd-	3rd-	IF
A1(.25/100)	90/58	48/33	25/18	21/15	4
A(6/100)	111/101	69/58	45/23	41/17	7
B1(25/100)	123/128	81/74	57/27	53/18	9
B(50/150)	137/152	95/92	71/34	67/20	12
C1(100/300)	158/186	116/119	93/48	89/24	20
C(100/600)	154/212	120/151	102/65	98/28	28

CLASS LP1000
WITHIN 320 KM OF MEXICAN BORDER

Channel Mexican Class	co-	1st-	2nd-/3rd-	IF
A(3/100)	75/90	45/51	26/16	6
AA(6/100)	79/101	49/58	31/17	7
B1(25/100)	105/128	70/74	46/18	9
B(50/150)	137/152	95/92	67/20	12
C1(100/300)	123/186	94/119	75/24	20
C(100/600)	143/212	113/151	94/28	28

CLASS LP100

Assuming 100 watts effective radiated power (ERP)
at 30 meters antenna height above terrain (HAAT)
60 dBu F(50,50) protected contour extends 5.2 km
MINIMUM DISTANCE SEPARATION (KM) NECESSARY TO:
CAUSE NO OVERLAP/RECEIVE NO OVERLAP

Channel Class	co-	1st-	2nd- reserved band	2nd-/3rd- commercial band	IF
A	47/92	36/49	30/15	29/8	7
C3	58/119	47/66	41/19	40/10	9
B1	67/119	54/66	47/19	46/10	9
C2	71/143	60/84	54/26	53/12	12
B	92/143	77/84	68/26	67/12	12
C1	91/178	80/111	74/39	73/16	20
C	110/203	100/142	93/56	93/19	28
D	24/23	13/13	7/7	6/6	4
Other LP100	24	14			

CLASS LP100 WITHIN 320 KM OF THE CANADIAN BORDER

Channel Canadian Class	co-	1st-	2nd-	3rd-	IF
A1(.25/100)	45/50	30/25	21/10	20/7	4
A(6/100)	66/92	50/49	41/15	40/8	7
B1(25/100)	78/119	62/66	53/19	52/10	9
B(50/150)	92/143	76/84	68/26	66/12	12
C1(100/300)	113/178	98/111	89/39	88/16	19
C(100/600)	118/203	106/142	99/56	98/19	28

CLASS LP100WITHIN 320 KM OF MEXICAN BORDER

Channel Mexican Class	co-	1st-	2nd-/3rd-	IF
A(3/100)	43/82	32/42	25/8	5
AA(6/100)	47/92	36/49	29/8	6
B1(25/100)	67/119	54/66	45/10	8
B(50/150)	91/143	76/84	66/12	11
C1(100/300)	91/178	80/111	73/16	19
C(100/600)	110/203	100/142	92/19	27

MICRORADIO CLASS

Assuming 1 watt effective radiated power (ERP)
at 30 meters antenna height above terrain (HAAT)
60 dBu F(50,50) protected contour extends 1.8 km
MINIMUM DISTANCE SEPARATION (KM) NECESSARY TO:
CAUSE NO OVERLAP/RECEIVE NO OVERLAP

Channel Class	co-	1st-	2nd- reserved band	2nd-/3rd- commercial band	IF
A	34/89	31/46	29/11	28/5	5
C3	45/115	42/62	40/15	39/6	7
B1	51/115	48/62	46/15	45/6	7
C2	58/140	55/80	53/22	52/8	10
B	73/140	69/80	67/22	65/8	10
C1	78/174	75/107	73/36	72/12	18
C	97/200	94/138	93/52	92/16	26
D	11/20	8/10	6/4	6/2	2
Other Microradio	7	4			

MICRORADIO CLASS WITHIN 320 KM OF THE CANADIAN BORDER

Channel Canadian Class[119]	co-	1st-	2nd-	3rd-	IF
A1(.25/100)	27/46	22/21	20/6	19/3	2
A(6/100)	47/88	42/46	40/11	39/5	5
B1(25/100)	59/115	54/62	52/15	51/6	7
B(50/150)	73/140	69/80	66/22	65/8	10
C1(100/300)	94/174	90/107	88/36	87/12	18
C(100/600)	103/200	100/138	98/52	97/16	26

MICRORADIO CLASS WITHIN 320 KM OF MEXICAN BORDER

Channel Mexican Class[120]	co-	1st-	2nd-/3rd-[121]	IF
A(3/100)	30/78	27/38	24/4	4
AA(6/100)	34/88	31/46	28/5	5
B1(25/100)	51/115	48/62	45/6	7
B(50/150)	73/140	69/80	65/8	10
C1(100/300)	78/174	75/107	72/12	18
C(100/600)	97/200	94/138	92/16	26

[119] In accordance with the Canada-United States FM Broadcasting Agreement, Canadian Class C stations are protected to the 58 dBu contour. All other Canadian stations are protected to the 54 dBu contour.

[120] In accordance with the Mexico-United States FM Broadcasting Agreement, Mexican Class B stations are protected to the 54 dBu. Mexican Class B1 stations are protected to the 57 dBu contour. All other classes are protected to the 60 dBu contour.

[121] Pursuant to the Mexico-United States Broadcasting Agreement, both the second- and third-adjacent channel spacings are based upon a -40 dBu D/U ratio.

APPENDIX C

In Band On Channel Digital Radio Service

1. FM broadcast signals are classified as "analog" emissions, *i.e.*, an emission which is characterized by a continuum of output parameter values. All current AM stations use analog emissions, as well as the majority of TV stations, although a limited number of TV stations have commenced digital transmissions since November 1, 1998. Digital emissions, which are characterized by discrete levels of output parameter values, are gradually replacing analog emissions in a variety of communications applications because they possess several technological advantages over analog emissions which make them more useful and reliable, and the Commission is committed to facilitating this transition in an orderly and systematic manner.[122] On October 9, 1998, a petition for rule making was filed with the Commission by USA Digital Radio Partners, L.P. ("USADR"), requesting the initiation of a proceeding to amend Part 73 of the Rules to permit the introduction of digital audio broadcasting in the AM and FM radio services. A full discussion of this petition is beyond the scope of this *Notice*. However, because the petition raises important issues concerning the interference protection criteria used in the FM band, we are addressing aspects of this issue now, at least preliminarily, in conjunction with our proposals to create two new FM station classes and to consider a microradio service. *See* paragraphs 47-49 in the *Notice*, above. This Appendix provides some details of USADR's proposal.

2. USADR proposes the introduction of digital signals on the FM band using a technique whereby a station would transmit both its analog signal and two digital signals of lesser amplitude, one on each side of the existing FM signal. (Other systems in development of which we have cognizance would use a similar signal configuration). This arrangement is commonly called "in-band, on-channel," or IBOC. Using IBOC, the two digital signals would be positioned on frequencies slightly offset above and below the frequency modulated signal and would be sufficiently suppressed in magnitude so that they would fit within the emission mask currently required for all FM stations. Using this configuration, USADR argues that digital signals could be introduced into the FM band without disrupting the reception of FM signals or amending the current station-to-station interference protection criteria. USADR envisions that this dual transmission mode, which they refer to as the "hybrid mode," would be initiated in the next few years and would continue for a number of years, eventually being replaced by an "all-digital mode," when the analog FM signal would be eliminated and the power of the 2 digital channel-edge signals would be significantly increased.

3. USADR states that it has conducted analyses of its proposed system which "verify that restricting the digital carriers to the 70 kHz region between 129 and 199 kHz from the center frequency on either side of the analog spectrum minimizes interference to the host analog and adjacent channels without exceeding the existing FCC spectrum mask."[123] In USADR's study of the interference impact of their hybrid and all-digital configurations on the existing FM station environment, and the interference

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[122] For example, the fidelity of digital audio recordings typically surpasses that of analog recordings, but this extra fidelity can be degraded or lost if the digital recording is transmitted by a station using an analog, rather than digital, emission. The comparative fidelity of the two emissions, given identical audio inputs, is a function of their relative bandwidths and other factors, as well as the quality of the listener's receiver and the strength of the signal.

[123] USADR Petition, Appendix C at 8

impact of existing stations on the USADR system, it found that its system could be implemented without disrupting regular FM analog service and without suffering significant interference from FM analog service.[124] The relevant issues from that study which impact this *Notice* are the effects arising from second- and third-adjacent channel interference, as we have not considered and are not proposing to permit any of the new classes of stations to cause co-channel or first-adjacent channel interference beyond those limits already applying to existing classes of FM stations.

4. With respect to third-adjacent channel interference, the USADR petition states: "Because of the design of the USADR IBOC system, digital reception is essentially not susceptible to third-adjacent channel interference; nor is IBOC likely to increase the potential for causing such interference to analog stations."[125] In its comments, NAB argues that, because an IBOC system will add new energy around host analog signal, effectively widening this signal to some degree, it will increase the potential for an IBOC station to interfere with the reception of the analog signal from a third-adjacent channel station. They conclude that "[a]llowing third-adjacent channel stations to move closer together would increase the signal strength of third-adjacent channel interfering stations with respect to the signal strength of a desired station and would thus increase the potential for this interference to occur. For this reason, third-adjacent channel spacing requirements cannot be modified."[126] Because no comprehensive operational test data is available for any form of IBOC system configuration, we do not know whether USADR or NAB is correct. We note that we are not proposing to alter the third-adjacent channel protection requirements between any of the existing classes of FM stations. Thus, under the proposals within this *Notice* concerning third-adjacent channels, the potential for interference would be from IBOC stations *to* the reception of analog LP1000, LP100, and microradio stations. This problem would present a minimal hinderance (or no hinderance at all, if USADR is correct) because the slight amount of additional noise caused by the digital signal within the third-adjacent channel would produce only a very marginal, if any, degradation of the received FM signal. Third-adjacent channel interference *from* LP1000, LP100, and microradio stations would be obviated by the significantly restricted occupied bandwidth and correspondingly tightened spectral mask we discuss for these stations.

5. USADR and NAB also address the issue of second-adjacent channel interference. NAB states that "second-adjacent channel interference is the primary challenge facing IBOC designers."[127] The NAB's diagrammatic representations of second-adjacent signal magnitudes and spacings clearly indicate that the most important second-adjacent channel interference consideration would involve IBOC-to-IBOC interference, because the upper digital sideband of the victim signal is almost directly adjacent to the lower digital sideband of the interfering signal.[128] NAB does not provide any analysis evaluating IBOC-to-FM

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[124] *Id.*, Appendix E

[125] *Id.*, Appendix D at 3

[126] NAB Comments at 23-24. Based on Figure 7 (page 24), it appears that the amount of third-adjacent channel digital energy which could cause interference within the victim receiver's FM analog channel is *extremely* small, and, in all likelihood, below the noise floor of the receiver.

[127] *Id.* at 22.

[128] *Id.* at 21.

or FM-to-IBOC second-adjacent interference. In the context of the current FM radio interference standards, USADR addresses the issue of second-adjacent FM interference to an IBOC signal, stating: "An analog second-adjacent interferer will have a negligible effect on the performance of the digital signal, since it does not overlap in frequency with the desired digital signal."[129] USADR also addressed the issue of second-adjacent IBOC interference to FM signals, noting that the digital sidebands of the hybrid and all-digital IBOC second-adjacent signals fall well outside the victim FM channel, and saying that "as a result, the [interference] effects of second-adjacent hybrid and all-digital IBOC signals [to FM signals] should be negligible."[130] We invite comment in this regard and the submission of relevant measurement data.

[129] USADR Petition, Appendix E at 22.

[130] *Id.* at 67.

APPENDIX D

Spectrum Availability Analysis

To investigate the feasibility of a low power radio service, we conducted spectrum availability analyses for sixty communities of various sizes throughout the United States. Twenty cities were chosen within each of three population "tiers." The first tier consisted of cities with populations of more than 500,000 persons; the second tier, cities with populations between 200,000 and 500,000 persons; and the third tier, cities with populations between 50,000 and 200,000 persons.[131]

Grids. We established a uniform distribution of study locations centered on each city by overlaying a coordinate grid consisting of grid cells of a size one minute latitude by one minute longitude. Throughout much of the country, a one minute variation in longitude is slightly less than one mile and a one minute variation in latitude is slightly more than one mile. The study locations correspond to where the grid lines intersect. For Tier 1 and Tier 2 cities, the grid extended 30 minutes a side. This yields a total of 961 intersections (study locations). For Tier 3 cities the grid extended 20 minutes on each side, yielding a total of 441 study locations.

Interference with respect to other services. At each study location, we determined whether or not a proposed low power FM station could operate on each of the 100 FM channels without causing or receiving objectionable interference.[132] We based these determinations entirely on minimum distance separation tables. In all cases, we used the larger of the two spacing requirements set forth in Appendix B. We applied these separation requirements to all full service FM licensed facilities, construction permits, pending applications, and vacant allotments.[133] Additionally, low power FM stations operating in the reserved band (channels 201-220) or on channel 253 were required to provide protection to nearby TV channel 6 stations.[134] Additionally, in one of the studies, LP100 stations were restricted from causing or receiving interference with respect to FM translators.[135]

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[131] Population figures were based upon the 1996 U.S. Census estimates.

[132] This protection criterion differs somewhat from the criteria proposed in this *Notice*. Specifically, the *Notice* proposes a secondary status for LP100 stations, which means that they would not be protected against interference received. Thus, our analysis, which assumes full protection against interference received by the low power station, may significantly underestimate the number of low power stations that could be assigned if they were permitted to receive interference.

[133] These studies were based upon the Mass Media Bureau's FM Engineering Database as of December 9, 1998. Subsequent staff actions or application filings could alter the results of this analysis.

[134] We used the TV channel 6 spacing requirements listed in the FM translator rules, 47 C.F.R. § 74.1205(a), for stations in the reserved band. We required low power stations operating on channel 253 in Zone I to be spaced at least 16 kilometers from TV channel 6 stations and those in Zone II to be spaced at least 20 kilometers.

[135] Because FM translator stations are not specified by class, we provided protection to and from translators in accordance with the following table based on the translator's ERP and HAAT in the azimuth towards the LP100 station.

Interference between low power stations. Our model provided interference protection between co-channel or first-adjacent channel low power stations.[136] Because of this, some stations are precluded from assignment solely because of previously assigned low power stations. Thus, the grid location assigned to a station becomes an important factor in its preclusive effect on the assignment of other co-channel and first-adjacent channel low power stations within the grid. For example, a channel 202 assignment near the center of the grid may preclude any other channel 202 station from being assigned, whereas two or perhaps four channel 202 stations could be assigned if they were located at the corners of the grid.

Assignment methodology. For each of the 100 FM frequencies, the analysis program determines which grid points are precluded because of interference considerations with respect to other services as described above. For each grid location available for a frequency assignment (*e.g.*, channel 202), the program determines how many assignments on other available co-channel (channel 202) and first-adjacent channel (channels 201 and 203) grid locations would be precluded by this assignment. The program repeats this process for each available grid location, recording the preclusive effect until all available locations have been considered. Then the assignment process begins. The program makes assignments at the most preclusive grid locations. Between equally preclusive locations, the location nearest the center of the grid is selected. We selected the most preclusive locations, rather than the least preclusive locations, in our analysis for several reasons. First, we wanted a realistic, rather than an overly optimistic assessment of the spectrum available for this proposed service. Also, transmitter sites will most likely be selected based on coverage considerations, not preclusion considerations. Finally, a great many of the grid locations theoretically available for a low power station will, in fact, not be available due to a variety of environmental considerations (*e.g.*, zoning restrictions, proximity to airports, swamps, rivers or water, etc.).[137]

FM Translator 1 mV/m contour distance (km)	LP100 co-channel (km)	LP100 1st-adjacent channel (km)	LP100 2nd/3rd-adjacent channel (km)	LP100 IF Channel (km)
13.3 or greater	67	35	21	5
Greater than 7.3 but less than 13.3	51	26	14	4
7.3 or less	30	16	8	5

[136] We used the minimum distance separations listed in Appendix B. The model did not provide any 2nd- or 3rd-adjacent channel protection between low power stations. No studies were made mixing LP1000 stations with LP100 stations. Similarly, no studies were made involving microradio stations.

[137] In several cities located in coastal areas or bordering on large bodies of water, the program excludes from consideration grid points likely to be over water.

City	State	Population	LP1000 Stations: FULL Interference Protection	LP1000 Stations: NO 3rd-Adjacent Channel Interference protection	LP1000 Stations: NO 2nd- or 3rd-Adjacent Channel Interference Protection
Cities above 500,000 (30x30 grid)					
New York	NY	7,313,800	0	0	0
Los Angeles	CA	3,420,500	0	0	1
Chicago	IL	2,708,000	0	0	0
Houston	TX	1,710,600	0	1	5
Philadelphia	PA	1,503,000	0	0	2
San Diego	CA	1,181,900	0	0	2
Phoenix	AZ	1,088,200	0	2	11
Dallas	TX	1,033,600	0	0	2
San Antonio	TX	1,025,300	1	4	13
Detroit	MI	979,900	0	0	2
San Jose	CA	841,300	0	1	3
Indianapolis	IN	759,200	0	2	6
San Francisco	CA	749,100	0	0	0
Baltimore	MD	686,900	0	0	0
Jacksonville	FL	686,900	0	4	12
Columbus	OH	633,200	2	3	9
Milwaukee	WI	613,300	0	2	6
Washington	DC	547,900	0	0	0
Boston	MA	546,000	0	2	3
Nashville	TN	513,100	0	2	10
			3	**23**	**87**
Cities between 200,000 - 500,000 (30 x 30 grid)					
Denver	CO	499,700	0	1	3
Cleveland	OH	485,600	0	1	7
Oklahoma City	OK	467,600	0	5	11
Charlotte	NC	456,700	0	0	3
Tucson	AZ	451,500	6	9	14
Albuquerque	NM	419,300	0	3	16
Atlanta	GA	402,000	1	4	11
Miami	FL	376,000	0	0	7
Las Vegas	NV	366,400	0	6	21
St. Louis	MO	355,600	0	4	12
Cincinnati	OH	352,800	0	1	4
Pittsburgh	PA	351,500	0	0	1
Minneapolis	MN	350,800	0	1	3
Omaha	NE	349,700	1	6	11
Wichita	KS	307,500	1	3	14
Louisville	KY	268,100	1	1	4
Raleigh	NC	247,200	0	0	3
Baton Rouge	LA	228,300	0	1	3
Mobile	AL	206,900	0	5	10
Richmond	VA	200,700	3	8	18
			13	**59**	**176**
Cities between 50,000 - 200,000 (20 x 20 grid)					
Montgomery	AL	198,300	2	6	9
Spokane	WA	196,400	2	3	7
Des Moines	IA	194,300	0	4	10
Grand Rapids	MI	190,100	0	2	7
Orlando	FL	183,200	0	1	5
Little Rock	AR	177,800	0	2	6
Salt Lake City	UT	175,000	0	0	11
Boise	ID	153,400	0	3	12
Springfield	MA	146,300	1	3	4
Kansas City	KS	139,100	0	1	11
Peoria	IL	111,500	1	4	5
Midland	TX	98,100	1	8	16
Manchester	NH	96,600	0	1	1
Santa Barbara	CA	89,300	2	5	15
Trenton	NJ	82,400	0	0	2
Harrisburg	PA	55,000	0	1	4
Flagstaff	AZ	52,900	5	13	25
Manchester	CT	51,900	0	2	4
Greenville	NC	50,700	2	3	5
LaCrosse	WI	50,500	1	2	6
			17	**64**	**165**

City	State	Population	LP100 Stations (Translators Not Protected)		
			FULL Interference Protection	NO 3rd-Adjacent Channel interference Protection	NO 2nd- or 3rd-Adjacent Channel Protection
Cities above 500,000 (30x30 grid)					
New York	NY	7,313,800	0	0	0
Los Angeles	CA	3,420,500	0	0	6
Chicago	IL	2,708,000	0	0	2
Houston	TX	1,710,600	0	4	17
Philadelphia	PA	1,503,000	1	1	8
San Diego	CA	1,181,900	0	0	6
Phoenix	AZ	1,088,200	1	14	47
Dallas	TX	1,033,600	0	0	9
San Antonio	TX	1,025,300	3	14	43
Detroit	MI	979,900	0	0	4
San Jose	CA	841,300	3	3	4
Indianapolis	IN	759,200	0	8	22
San Francisco	CA	749,100	0	0	2
Baltimore	MD	686,900	0	4	9
Jacksonville	FL	686,900	1	10	43
Columbus	OH	633,200	7	13	36
Milwaukee	WI	613,300	0	8	18
Washington	DC	547,900	0	0	4
Boston	MA	546,000	0	2	4
Nashville	TN	513,100	1	9	40
			17	**90**	**324**
Cities between 200,000 - 500,000 (30 x 30 grid)					
Denver	CO	499,700	0	4	9
Cleveland	OH	485,600	0	2	25
Oklahoma City	OK	467,600	1	19	41
Charlotte	NC	456,700	1	1	13
Tucson	AZ	451,500	24	34	51
Albuquerque	NM	419,300	0	11	67
Atlanta	GA	402,000	1	13	36
Miami	FL	376,000	0	0	30
Las Vegas	NV	366,400	1	23	84
St. Louis	MO	355,600	0	13	43
Cincinnati	OH	352,800	4	9	18
Pittsburgh	PA	351,500	0	4	7
Minneapolis	MN	350,800	3	9	16
Omaha	NE	349,700	4	16	32
Wichita	KS	307,500	4	9	54
Louisville	KY	268,100	1	2	13
Raleigh	NC	247,200	0	1	9
Baton Rouge	LA	228,300	2	6	14
Mobile	AL	206,900	0	12	33
Richmond	VA	200,700	8	24	59
			54	**212**	**654**
Cities between 50,000 - 200,000 (20 x 20 grid)					
Montgomery	AL	198,300	9	15	24
Spokane	WA	196,400	0	3	14
Des Moi:·	IA	194,300	2	7	19
Grand Rapids	MI	190,100	0	3	10
Orlando	FL	183,200	0	1	8
Little Rock	AR	177,800	0	4	24
Salt Lake City	UT	175,000	0	1	18
Boise	ID	153,400	0	5	28
Springfield	MA	146,300	4	9	14
Kansas City	KS	139,100	0	1	18
Peoria	IL	111,500	7	11	17
Midland	TX	98,100	1	15	34
Manchester	NH	96,600	1	3	7
Santa Barbara	CA	89,300	5	14	35
Trenton	NJ	82,400	2	2	4
Harrisburg	PA	55,000	0	1	6
Flagstaff	AZ	52,900	10	28	83
Manchester	CT	51,900	0	5	18
Greenville	NC	50,700	6	7	12
LaCrosse	WI	50,500	5	10	14
			52	**145**	**407**

City	State	Population	LP100 Stations (Translators Protected)		
			FULL Interference protection	NO 3rd-Adjacent Channel Interference Protection	NO 2nd- or 3rd-Adjacent Channel Protection
Cities above 500,000 (30x30 grid)					
New York	NY	7,313,800	0	0	0
Los Angeles	CA	3,420,500	0	0	0
Chicago	IL	2,708,000	0	0	2
Houston	TX	1,710,600	0	1	15
Philadelphia	PA	1,503,000	0	0	5
San Diego	CA	1,181,900	0	0	3
Phoenix	AZ	1,088,200	0	3	22
Dallas	TX	1,033,600	0	0	9
San Antonio	TX	1,025,300	2	13	40
Detroit	MI	979,900	0	0	4
San Jose	CA	841,300	0	2	3
Indianapolis	IN	759,200	0	8	22
San Francisco	CA	749,100	0	0	1
Baltimore	MD	686,900	0	4	9
Jacksonville	FL	686,900	0	8	40
Columbus	OH	633,200	7	13	36
Milwaukee	WI	613,300	0	6	17
Washington	DC	547,900	0	0	4
Boston	MA	546,000	0	2	4
Nashville	TN	513,100	0	7	37
			9	67	273
Cities between 200,000 - 500,000 (30 x 30 grid)					
Denver	CO	499,700	0	3	8
Cleveland	OH	485,600	0	2	25
Oklahoma City	OK	467,600	1	13	34
Charlotte	NC	456,700	0	0	12
Tucson	AZ	451,500	13	13	31
Albuquerque	NM	419,300	0	6	37
Atlanta	GA	402,000	1	6	26
Miami	FL	376,000	0	0	29
Las Vegas	NV	366,400	0	14	63
St. Louis	MO	355,600	0	13	43
Cincinnati	OH	352,800	4	9	18
Pittsburgh	PA	351,500	0	4	7
Minneapolis	MN	350,800	2	6	12
Omaha	NE	349,700	1	13	27
Wichita	KS	307,500	3	9	52
Louisville	KY	268,100	1	2	11
Raleigh	NC	247,200	0	1	7
Baton Rouge	LA	228,300	2	6	14
Mobile	AL	206,900	0	12	33
Richmond	VA	200,700	7	23	58
			35	155	547
Cities between 50,000 - 200,000 (20 x 20 grid)					
Montgomery	AL	198,300	6	12	21
Spokane	WA	196,400	0	3	12
Des Moines	IA	194,300	1	6	17
Grand Rapids	MI	190,100	0	3	10
Orlando	FL	183,200	0	1	8
Little Rock	AR	177,800	0	3	21
Salt Lake City	UT	175,000	0	0	7
Boise	ID	153,400	0	4	23
Springfield	MA	146,300	3	6	10
Kansas City	KS	139,100	0	1	18
Peoria	IL	111,500	6	10	16
Midland	TX	98,100	1	15	35
Manchester	NH	96,600	0	2	5
Santa Barbara	CA	89,300	3	11	31
Trenton	NJ	82,400	0	0	2
Harrisburg	PA	55,000	0	1	5
Flagstaff	AZ	52,900	2	15	68
Manchester	CT	51,900	0	5	9
Greenville	NC	50,700	2	3	8
LaCrosse	WI	50,500	3	5	9
			27	106	335

APPENDIX E

Initial Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act (RFA),[138] the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities by the policies and rules proposed in the present *Notice of Proposed Rule Making*. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the IRFA provided above in paragraph 121. The Commission will send a copy of the *Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration. *See* 5 U.S.C. § 603(a). In addition, the *NPRM* and IRFA (or summaries thereof) will be published in the *Federal Register*. *See id.*

Need For and Objectives of the Proposed Rule Changes:

The Commission received petitions for rulemaking asking for the creation of a low power radio service. Because they raised similar or identical issues, the Commission coordinated its responses to them. The Commission released Public Notices of its receipt of three of the proposals and invited public comment on them.

In response to significant public support, the Commission is now proposing to create a new, low power FM service. Specifically, it is proposing two classes of LPFM service, a 1000-watt maximum class ("LP1000") and a 100-watt maximum class ("LP100"). We are also asking whether to create a third class (called "microradio"), which would have a maximum power output of one to ten watts. Because of the predicted lower construction and operational costs of LPFM stations as opposed to full power facilities, we expect that small entities would be expected to have few economic obstacles to becoming LPFM licensees. Therefore, this proposed new service may serve as a vehicle for small entities and under-represented groups (including women and minorities) to gain valuable broadcast experience and to add their voices to their local communities.

Legal Basis:

Authority for the actions proposed in this *Notice* may be found in §§ 4(i) and 303 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303.

Description and Estimate of the Number of Small Entities to Which the Rules Would Apply:

The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[139] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and

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[138] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 *et. seq.*, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

[139] 5 U.S.C. § 603(b)(3).

"small governmental jurisdiction."[140] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[141] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[142] A small organization is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[143] Nationwide, as of 1992, there were approximately 275,801 small organizations.[144] "Small governmental jurisdiction" generally means "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than 50,000."[145] As of 1992, there were approximately 85,006 such jurisdictions in the United States.[146] This number includes 38,978 counties, cities, and towns; of these, 37,566, or 96 percent, have populations of fewer than 50,000.[147] The Census Bureau estimates that this ratio is approximately accurate for all governmental entities. Thus, of the 85,006 governmental entities, we estimate that 81,600 (91 percent) are small entities.

The Small Business Administration defines a radio broadcasting station that has $5 million or less in annual receipts as a small business.[148] A radio broadcasting station is an establishment primarily engaged in broadcasting aural programs by radio to the public.[149] Included in this industry are commercial, religious, educational, and other radio stations.[150] The 1992 Census indicates that 96 percent (5,861 of 6,127) radio station establishments produced less than $5 million in revenue in 1992. Official Commission

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[140] 5 U.S.C. § 601(6).

[141] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

[142] Small Business Act, 15 U.S.C. § 632 (1996).

[143] 5 U.S.C. § 601(4).

[144] 1992 Economic Census, U.S. Bureau of the Census, Table 6 (special tabulation of data under contract to Office of Advocacy of the U.S. Small Business Administration).

[145] 5 U.S.C. § 601(5).

[146] U.S. Dept. of Commerce, Bureau of the Census, "1992 Census of Governments."

[147] *Id.*

[148] 13 C.F.R. § 121.201, SIC code 4832.

[149] 1992 Census, Series UC92-S-1, at Appendix A-9.

[150] *Id.* The definition used by the SBA also includes radio broadcasting stations which also produce radio program materials. Separate establishments that are primarily engaged in producing radio program material are classified under another SIC number, however. *Id.*

records indicate that 11,334 individual radio stations were operating in 1992.[151] As of December 31, 1998, Commission records indicate that 12,472 radio stations were operating, of which 7,679 were FM stations.[152]

The proposed rules, if adopted, would apply to a new category of FM radio broadcasting service. For the proposed service, the number of stations that could be licensed without causing unacceptable interference would depend on the interference criteria that we will apply to the various classes of low power radio service. Should we determine that second- and/or third-adjacent channel interference protection would not be necessary to prevent unacceptable interference to full power stations, then far more LPFM facilities could be authorized. The number of stations that we could authorize is also dependent upon the ratio of LP1000, LP100, and microradio stations for which we would accept applications. For instance, the greater the number of LP1000 stations, the less spectrum would remain available to accommodate other LPFM facilities. This, in turn, would affect how many new stations would be available to small entities.

The number of entities that may seek to obtain a low power radio license is currently unknown. We note, however, that the Commission has received over 13,000 inquiries in the past year from individuals and groups interested in operating such a facility. In addition, we expect that, due to the small size of low power FM stations, small entities would generally have a greater interest than large ones in acquiring them.

We seek comment and data regarding the number of small entities that may be affected by the proposed rules, if adopted.

Reporting, Recordkeeping, and Other Compliance Requirements:

The Commission is proposing to create a new broadcasting service that may allow hundreds or thousands of small entities to become broadcast licensees for the first time. This endeavor would require the collection of information for the purposes of processing applications for (among other things) initial construction permits, assignments and transfers, and renewals. Given the power levels and purposes of LP1000 stations (such as their potential to be an entry-level radio service), we would likely require the same or similar reporting, recordkeeping, and other compliance requirements as full power radio broadcasters. However, recognizing that LPFM 100 and microradio licensees may be small, inexperienced operators who would be serving fairly limited areas and audiences, we intend to keep this service as simple as possible. Accordingly, we intend to keep reporting, recordkeeping, and other compliance requirements to a minimum. The *Notice* seeks comment on these issues, including comment specifically directed toward the possible effects of such requirements on small entities.

Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered:

We are proposing a low power radio service that is divided into subclasses, defined by their power output (in watts): LP1000 and LP100. We are also requesting comment on a possible microradio class of 1-10

[151] FCC News Release, No. 31327 (Jan. 13, 1993).

[152] FCC News Release, "Broadcast Station Totals as of December 31, 1998" (Jan. 25, 1999).

watts. With this subdivision, small entities would be able to apply for stations in the class that is most appropriate for their interests and their ability to construct and operate a station. The *Notice* asks for comment on the proposed classes and asks whether an alternative system would better serve the public interest.

The *Notice* proposes ownership rules intended to assist small entities construct or acquire LPFM stations. Parties with attributable interests in any full power broadcast facilities would not be eligible to have any ownership interest in any low power radio stations; this would prevent large group owners (or even large single-station owners) from constructing and operating LPFM facilities that might otherwise be available to small entities. The proposed local and national ownership restrictions of one station per community and five or ten nationwide similarly would be intended to ensure that ample LPFM stations are available for small entities. However, the ownership rules would also prohibit small entity full power broadcasters from acquiring LPFM licenses.

The *Notice* does not propose a local residency requirement on LPFM licensees. Regarding LP1000 stations, it notes that full power stations require neither local residency nor integration between ownership and management to assess and address local needs and interests. Such a restriction would also frustrate any attempt at achieving certain efficiencies from national multiple ownership long recognized as beneficial for full-power stations. Additionally, because the service areas for LP1000 stations will be relatively small, a potential new entrant might hold residency in a location where no LP1000 channels can be found, so such a residency requirement might frustrate one of the significant potentials of LP1000 stations. The same rationale can be applied to LP100 and microradio stations. Moreover, we expect that the nature of the service provided by the two smaller classes of stations would attract primarily local or nearby residents. The *Notice* seeks comment on these assumptions and resulting proposal.

The *Notice* requests comment on whether unlicensed operators, who have broadcasted illegally, should be considered eligible to hold LPFM licensees. Although we do not have data on this issue, we presume that most of these illegal operators are individuals, small groups, or small entities. As a result, our disposition of this issue could be of great concern to this relatively small group, should they desire to operate LPFM stations within the legal framework we are proposing. The *Notice* asks whether unlicensed operators have the requisite character qualifications to be Commission licensees. It also asks whether those who have promptly ceased operation when advised by the Commission to do so, or who voluntarily cease operations within ten days of the publication of the summary of this *Notice* in the *Federal Register*, should be considered differently in this regard.

The *Notice* also asks whether LPFM stations of each class should be subject to the variety of other rules in Part 73 with which full power stations must comply, such as the main studio rule, the public file rule, and the periodic ownership reporting requirements. Given the purposes and power levels of LP1000 stations, we tentatively conclude that LP1000 licensees should generally meet the Part 73 rules applicable to full power FM stations. However, we seek comment on whether sufficient useful purpose would be served in applying each rule to these licensees. The *Notice* states that we would be disinclined to apply most of these service rules to microradio stations, and we particularly seek comment with regard to the rules appropriate for LP100 stations. Commenters are invited to discuss which existing rules should apply or what new or modified rules would be more appropriate. Because of the costs of complying with Commission rules, this issue could be of importance in determining whether a small entity could afford to operate an LPFM station.

The *Notice* proposes a mandatory electronic filing system, envisioning an internet-based system that would provide substantial assistance to potential applicants with little technical or legal background. For example, we may be able to develop a system that could inform a potential applicant what frequencies are available before an application is filed. The Commission notes the increasing ease of accessibility to the internet through private homes, public libraries, and other publicly accessible places. Without electronic filing, the Commission lacks the resources to promptly accomplish the necessary data entry for hundreds or thousands of LPFM (and, possibly, microradio) applications. A manual filing system might result in applicants' not learning for many months (at least) whether their applications were acceptable for filing. As a result, electronic filing would provide superior service to LPFM applicants and speed service to the public.

The Commission proposes to adopt a window filing system with short filing periods of only a few days each, and it asks commenters to address if that would have advantages over a first-come, first-served system. One of the Commission's concerns is to reduce the number of mutually exclusive applications, due to the resulting delay in service implementation, and because Section 309(j) of the Communications Act of 1934, as amended, requires mutual exclusivity between or among commercial broadcast applications to be resolved through auctions. Also, Section 309(j)(6)(E) of the Communications Act of 1934, as amended, states that the Commission has the "obligation, in the public interest, to continue to use engineering solutions, threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity in application and licensing proceedings." With auctions, receiving an LPFM construction permit could become too expensive for many of the people this service is intended to serve. With regard to a first-come system, the *Notice* questions the fairness of rejecting an application as unacceptable for filing because it would be mutually exclusive with one filed only a moment earlier, possibly solely because the latter party may have had a poor internet connection.

Federal Rules that Overlap, Duplicate, or Conflict with the Proposed Rules:

The initiatives and proposed rules raised in this proceeding do not overlap, duplicate or conflict with any other rules.

JOINT STATEMENT OF CHAIRMAN WILLIAM E. KENNARD
AND COMMISSIONER GLORIA TRISTANI

As we've traveled around the country we've talked to lots of people who want to use the airwaves, to speak to their communities -- churches, community groups, elementary schools, universities, small businesses, and minority groups. They see – as we do – that the airwaves are a great natural resource, and the creation of a low power radio service could provide an effective way for more people to use this resource.

As consolidation in the broadcast industry closes the doors of opportunity for new entrants, we must find ways to use the broadcast spectrum more efficiently so that we can bring more voices to the airwaves. The *Notice* adopted today proposes several ways to do so.

As we consider the establishment of a low power radio service, we will be mindful of interference concerns. We will not undermine the technical integrity of the FM band. Our job is to be the guardian of the spectrum, not to degrade it.

And we are mindful of the conversion to digital. We are currently considering USA Digital Radio's petition to establish an in-band, on-channel digital broadcasting service and we are following the testing and development of in-band digital systems. This is a great start, and we will do our part to make sure that local radio is not left on the sidelines of the digital revolution.

However, we cannot deny opportunities to those who want to use the airwaves to speak to their communities simply because it might be inconvenient for those who already have these opportunities.

In the past, the Commission has faced incumbents raising obstacles that might impede the development of new technology. We saw this with the development of cable television service, low power television, direct broadcast satellites, and the digital audio radio service. In each instance, the Commission was able to overcome these obstacles and bring these new technologies to the American people, and in every case, the American people have benefited from new services and competition while the incumbent industry has continued to prosper.

Therefore, we ask the broadcast community to work with the Commission in developing today's proposals for a low power radio service that will coexist with the incumbent services. In this way, we can work together to maximize use of the airwaves for the benefit of the American public.

Statement
of
Commissioner Susan Ness

Re: In the Matter of Creation of a Low Power Radio Service

This Notice of Proposed Rulemaking describes three low power FM services that could provide a means to give a public voice to individuals and entities currently not able to participate in our broadcasting system. We are seeking comment on whether to authorize any or all of these new services. By doing so, we may enable students, community organizations, and those underrepresented in conventional broadcasting to provide programming of special interest to small and niche populations.

At the same time, the Commission recognizes its role, as Chairman Kennard has said, "to be the guardian of the spectrum, not to degrade it." One of the primary reasons for the agency's establishment was to avoid chaos on the airwaves. To me, there are three issues that will be in the forefront as we build a record: *first,* whether these services should be open only to noncommercial entities; *second,* whether and to what extent these services would adversely affect the potential transition of existing broadcasters from analog to digital through an "In Band On Channel" (IBOC) system; and *third,* whether the proposed services would create undue levels of interference to full power services.

We have heard from many individuals and organizations who have described in moving detail their hopes and plans for local service to their communities. Many requests emphasized their nonprofit goals which could fit very well within these low power structures. I have been particularly interested in the prospects of this service for students, having been involved with my own college radio station.

I would like to believe that this proceeding will lead us to be able to create one or more new services in which at least some of the many hopeful people we have heard from may participate. I also support the Chairman's call for more ownership opportunities for women and minorities who are finding it more and more difficult to enter broadcasting as consolidation drives up station prices and access to capital continues to be scarce for new entrants. But I underscore that those interested in low power radio must seriously assess the economic requirements of launching and sustaining a new business, whether on a commercial or noncommercial basis.

Before I am to conclude that one or more new services are feasible, I must be satisfied that the technical issues have been adequately addressed. There are real questions regarding potential adverse effects on IBOC digital service and interference protections, particularly with respect to second adjacent channels. I have long championed the development of a terrestrial digital service to enable broadcasters to make a digital conversion, should they so choose, to remain technically competitive with satellite Digital Audio Radio Service (DARS). IBOC technology appears to be almost ready for commercial application and should not be undermined or compromised by any action we take on low power FM. The record that will be developed over the next few months must provide an objective technical basis for low power FM service. We would then brighten, not tarnish, the Commission's performance in maintaining the integrity of the radio spectrum while expanding the diversity of voices, which has so enriched the airwaves over the years.

SEPARATE STATEMENT OF COMMISSIONER MICHAEL K. POWELL

Re: Notice of Proposed Rulemaking in MM Docket No. 95-25 - Creation of a Low Power FM Radio Service

I support issuance of this Notice of Proposed Rulemaking looking toward creation of low power radio service. Many have called upon us to consider a new low power class of service as a means of opening opportunities in radio broadcasting for new entrants. Others contend that authorizing low power services will facilitate "community radio" designed to serve currently unmet information needs. These are worthy goals and we should consider whether we can authorize such services.

Having said this, I want to make clear that I have some concerns about this proposal. I highlight two in particular and urge those who comment in this proceeding to focus on them. First, I urge the parties to develop a full, objective record regarding potential interference problems that might result from creation of these new classes. One very important purpose of this agency is to ensure efficient and effective use of the radio spectrum. I will be very interested in understanding the spectral ramifications of creating low power FM radio service and I intend to consider interference questions very seriously before taking final action.

My second concern relates to the impact that creation of low power service may have on potential conversion to terrestrial digital radio service. I understand that there have been promising advances of late that can enable current radio operations to convert to digital transmission technology "in band on channel." Converting to digital transmission technology could improve the quality of radio service and potentially increase spectral efficiency. These are very real benefits and I would be concerned if authorizing some or all of these low power radio services would make in band on channel conversion to digital radio unworkable for existing terrestrial services. Again, I encourage commenters to focus specifically on this issue, so that we can make a fully informed judgement.

DISSENTING STATEMENT OF
COMMISSIONER HAROLD W. FURCHTGOTT-ROTH

In re: Notice of Proposed Rulemaking, Creation of a Low Power Radio Service, MM Docket No. 99-25.

I am not opposed to the creation of a low power radio service. Whatever new service can be provided within the range of existing interference regulations would be something worth considering. I do not believe that we should create new stations at the expense of current interference protection standards, however. Were the NPRM limited to consideration of service based on the maintenance of the interference rules now set forth in our regulations, I could thus have supported its issuance.

But the NPRM is not so limited. As the appendix shows, under existing interference rules the Commission can authorize so few new stations that the results would hardly warrant the effort. In order to create any substantial amount of new service, protection standards have to be loosened so far as to eliminate third and even second adjacent channel safeguards. This is a severe incursion on the rights of current licenseholders, as well as on the value of their licenses, which will be drastically undercut in the market if these proposals are adopted. This proposal also potentially impairs the ability of current licensees to serve their listeners, who must not be forgotten; while new people may be able to broadcast, others may lose their ability to receive and listen to existing stations due to interference. It especially troubles me that the Commission has made *no* effort to assess, much less quantify, the effect on existing stations of eliminating these safeguards. In my opinion, weighing the "cons" of the proposal -- namely, the negative effects on existing stations and their audiences -- in addition to considering its "pros" is essential to the decision whether to move forward with these petitions for rulemaking.

Even if the second and third adjacent channel protections were wholly eliminated, however, very little new service would be created in the major urban markets at which this proposal is in significant part aimed. *See supra* at para. 1 ("We believe these new LPFM stations would provide a low-cost means of serving urban communities and neighborhoods. . . .). For instance, in New York city, there would be no LP1000 stations and no LP100 stations, and in Los Angeles there will be only one LP1000 station, no LP100 stations with translator protections and six LP100 stations with unprotected translators. *See Appendix D.* In addition to their small number, these services will be relatively unavailable to mobile audiences due to their low wattage.

Furthermore, while many proponents of this rulemaking see it as a means of increasing broadcast ownership by minorities and women, there is in all likelihood no constitutionally sound way to assure such a result. There is simply no way that the Commission can say that, if a first-come, first-served rule is adopted, these licenses will not be awarded to whoever applies for them first or that, in the case of mutually exclusive applications, these licenses will not go to the highest bidder.

Having thus proposed the creation of these new stations, the Commission then concludes that it should impose "strict local and cross- ownership restrictions" on them. *Supra* at para. 57. If it did so, the Commission would create a gross inconsistency with the more liberal ownership limits under section 202(b) of the Telecommunications Act of 1996. Nothing in section 202(b) suggests that it was not meant to apply prospectively (as most statutes are) to any radio stations that might come into being after the Act, as the NPRM suggests. And, on a practical level, these ownership limits would help to ensure that no one with any actual experience in broadcasting could actively participate in these new stations. By dint of regulation, then, these stations may be pushed toward second-class performance and quality levels.

The creation of low power radio by elimination or modification of current interference rules may also have a similar effect on the FM radio band itself by hindering the development of new, advanced services such as in-band, on-channel digital radio. As the NPRM notes, plans for the delivery of this service have been based on current interference standards, and it is unclear whether these plans can be successfully modified should those standards change. While the rest of broadcasting (indeed the entire communications industry) moves toward the advantages of digital technology, this contemplated FCC policy may make it harder for the FM radio band to keep up.

Moreover, "community participation and the proliferation of local voices," *supra* at para. 2, can be achieved through a variety of ways other than the creation of microradio. People can communicate with others by obtaining extant commercial or noncommercial licenses, the purchase of air time on broadcast properties, leased access and/or PEG cable schemes, amateur radio, e-mail, internet home pages, bulletins and flyers, and even plain old-fashioned speech. The notion that a message must be broadcast over radio spectrum before its speaker has a "voice" overlooks the realities of modern life. Indeed, as time goes on, broadcasting has faced increasing competition, becoming less and less powerful a medium. It is no secret that the television broadcast networks are attempting to find innovative ways to deal with decreasing viewership in the face of cable, DBS, and other video delivery and entertainment systems that compete for the public's attention.

And, of course, Commission enforcement of rules and regulations applicable to the new stations will be an administrative drain and involve the Commission in micromangement of the smallest of operations.

Thus, this proposal does not do much to advance its supposed goals. What minimal furtherance of those goals it would achieve comes at great cost to current licenseholders and listeners. Good -- arguably better, even -- alternatives for the dissemination of messages in America certainly exist. And the administrative burdens on the Commission will likely be great. Accordingly, I do not think this proposal represents an efficient use of radio spectrum.

In addition, I do not view concern about the effects of consolidation in the radio

industry as the result of the 1996 Telecommunications Act as an appropriate motivation for the creation of low power radio stations. *See supra* at para. 10 ("[W]e are concerned that consolidation may have a significant impact on small broadcasters and new entrants into the radio broadcasting business by driving up station prices, thereby exacerbating the difficulty of entering the broadcast industry and of surviving as an independent operator."). These are, at bottom, arguments against consolidation. Congress, however, made the clear policy choice to lift national ownership limits. Whatever the results of that choice, they are the function of Congress' elected course; Congress surely realized that one of the possible results of lifting ownership limits would be that any pent-up demand for properties that would be released into the market might raise prices.

Finally, I have procedural concerns about the Commission's use of its resources in relation to this proceeding. Specifically, I wonder whether the "substantial interest in, and public support for," *supra* at para. 1, this rulemaking, relied upon so heavily in this item, was not partly generated by the Commission itself with its web site page for low power radio.[1] A brief review of this page reveals that -- whatever one might think about low-power on the merits -- the summary provided there was simply not an objective assessment of the rulemaking and the issues that it raises. For example, the summary described the possible advantages of low power radio but made no mention of the potential drawbacks. The summary also urged readers to file comments in order to "successful[ly]" implement the proposals.

The provision of information about our activities is an important and laudable goal. In meeting this goal, however, we must be careful not to slant our presentation toward one point of view, lest the Commission become an advocate instead of a neutral decisionmaker. Of all agencies, the FCC should not be attempting to shape and color public opinion on matters before us by the dissemination of unbalanced information. I believe that, if we are to enjoy the appearance of fairness in the rulemaking process, we should not use government funds to promote a particular result prior to even the issuance of an NPRM. Not only does such promotion damage our impartiality, but it puts private interest groups on the other side of the issue in the position of having to expend resources to counter not just the efforts of opposing parties but of the agency as well.

* * *

In short, given the potential harmful effects on current licensees and their listeners, the limited benefits of creating a low power radio service, the burdensome regulations placed on the new stations, the new enforcement duties for the Commission, and the availability of alternatives for communication, I do not believe that the pursuit of this proposal comports

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[1]Since the adoption of this NPRM, the Mass Media Bureau has revised the site. I have attached the version of the site that was posted up until that time, however. *See* Low Power FM Radio Service <www.fcc.gov/mmb/prd/lpfm> (as updated 12/14/98) (attached).

with our statutory duty to" make available . . a rapid, *efficient*, Nation-wide and world-wide wire and radio communication service." 47 USC section 151 (emphasis added).

Mass Media Bureau
Policy and Rules Division

Low Power FM Radio Service

FCC Explores Idea of Creating Low Power FM Radio Service for Local Communities

The FCC is exploring the creation of a new low power FM radio service. This service, which could include the licensing of stations at various power levels from 1-1000 watts, would be ideally suited to meet the special needs of neighborhood-based community groups, religious groups or churches, minority groups, schools and universities, and small businesses. The low power stations would allow these groups or businesses to use the public airwaves to speak to their local and nearby communities.

The FCC's successful consideration of the institution of a low power radio service requires broad participation and involvement by all segments of the public. This site has been designed to provide information on the FCC's proceedings concerning low power radio.

There are numerous links to other documents on this page. Some documents are available only in Adobe .pdf format. To obtain information about the Acrobat file format and the free reader available from Adobe, click

The Current Proceeding at the FCC

Petitions for Rule Making

The process of considering the creation of a low power FM radio service began with Public Notices in February and March, 1998 when the FCC sought comment on two separate Petitions for Rule Making. These petitions ask the FCC to begin the process of changing its rules to create a low power radio service as well as a low power service for occasional special events. These included the petitions of Nickolaus E. Leggett and Judith F. Leggett; and Donald Schellhardt, J.Rodger Skinner, Jr., and Gregory D. Deieso. Input from the public is crucial to the process of changing the FCC's rules. The FCC received hundreds of comments from the public on the Public Notices on the Petitions for Rule Making. The commenters -- the broadcast industry, individual citizens, potential low power radio broadcasters, engineers, non-profit advocacy groups and others -- evaluated the proposals and suggested new ways to provide low power radio. The FCC staff is reviewing and considering these comments and preparing a recommendation for the Commission for its review and decision as to how to proceed in this matter.

What's Next?

The FCC has several options. It can decide to issue a "Notice of Proposed Rule Making" which would include specific proposals for a new low power FM service, and which would provide a basis for the FCC to change its rules to a new radio service; it can decide to issue a "Notice of Inquiry," to seek more information from the public before issuing specific proposals for low power FM radio; or it can decide not to take any further action on establishing a low power radio service at this time and deny these Petitions for Rule Making.

What can I do?

The time for comment on the Petitions for Rule Making has passed. As described above, if the FCC decides to take further action on establishing a low power radio service there will be a new opportunity for the public to provide views to the FCC. Keep checking this web site to learn when there will be a new opportunity for public comment to the FCC.

Background

Recent Changes in The Radio Industry

In just a few years, consolidations of radio ownership have reshaped the radio industry. The Telecommunications Act of 1996 eliminated the cap on the number of radio stations one company may own nationwide and raised the limit on the number of stations that one company may own in a given market. In the years since the adoption of the Act, the number of radio station owners has dropped by 12%, even as the number of stations has increased by 3%. In addition, less than 3% of radio stations in the United States are minority-owned, and that number, too, dropped in the years between 1995 and 1997 -- the number of African-American-owned FM stations dropped 26% and the number of Hispanic-owned FM stations dropped 9%. The National Telecommunications and Information Administration has recently produced a report on Minority Commercial Broadcast Ownership in the United States.

In his Remarks to the National Association of Broadcasters Radio Convention, FCC Chairman William E. Kennard stated that "There is a tremendous need for us to find ways use the broadcast spectrum more efficiently so that we can bring more voices to the airwaves..... [W]e have an obligation to explore ways to open the doors of opportunity to use the airwaves, particularly as consolidation closes those doors for new entrants. But.... we will not undermine the technical integrity of the FM band. Our job is to be the guardian of the spectrum, not to degrade it. But we cannot deny opportunities to those who want to use the airwaves to speak to their communities simply because it might be inconvenient to those of you who already have these opportunities."

As Commissioner Gloria Tristani said in her Remarks before the Texas Broadcasters Association "We need to try to find ways for new people to get into the radio business....We must find ways of continuing to provide opportunities for new entrants, including minorities. It seems to me that much of the pressure to license "micro" radio stations is coming from people who want to become legitimate broadcasters but can't find a way in. If broadcasting becomes the exclusive province of millionaires and major corporations, that pressure will only increase."

Low Power Radio Backgound

Under current FCC rules, in most circumstances, the smallest commercial FM radio licensees will be authorized only if they could operate at a power of 6000 watts at the selected location and channel, and commercial and non-commercial FM stations must operate at a minimum power level of at least 100 watts. The institution of a low power FM service will create opportunities for community groups or small businesses that cannot afford the facilities and equipment necessary for a full-power station to operate smaller, less expensive stations. For more information, including the FCC Fact Sheet, *Unlicensed Broadcasting*, which outlines the rationale behind the FCC's enforcement of its radio licensing scheme, and issuance of warnings, injunctions, seizures or fines against unlicensed broadcasters, go to the Audio Services Division pages Low Power AM and FM Broadcast Radio Stations and Low Power Radio Stations.

Policy and Rules Division Home Page || Audio Services Division Home Page
MMB Home Page || Send email to *lpfm@fcc.gov*

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